



Rodney J. Ross
Manager Regulatory Affairs

Mail Station 9708
PO Box 53999
Phoenix, Arizona 85072-3999
Tel 602-250-4944
Rodney.Ross@aps.com

December 18, 2019

Docket Control
Arizona Corporation Commission
1200 W. Washington Street
Phoenix, AZ 85007

RE: Rate Review and Examination of the Books and Records of
Arizona Public Service Company (APS or Company)
Docket No. E-01345A-19-0003

Attached are the PowerPoint slides and the bill comparison examples presented by APS and Brattle at the December 11, 2019 Open Meeting's discussion of APS's Rate Comparison Tool.

Please contact me at (602) 250-4944 with any questions.

Sincerely,

A handwritten signature in black ink, appearing to read "RJR", followed by a stylized flourish.

Rodney J. Ross
RJR/jav

Attachments

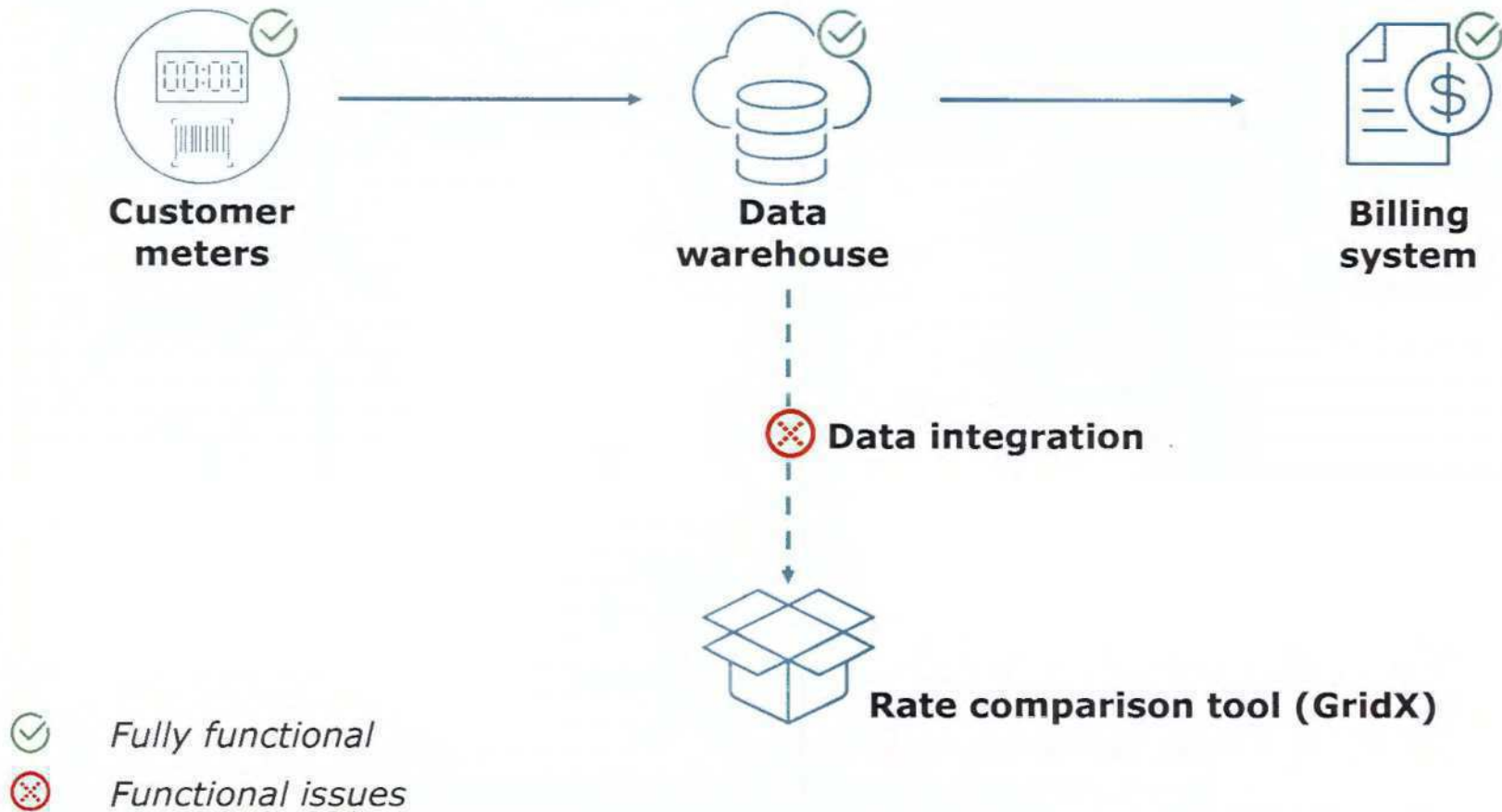
APS Rate Comparison Tool

December 11, 2019
Open Meeting



Rate Comparison Tool – Issue Summary

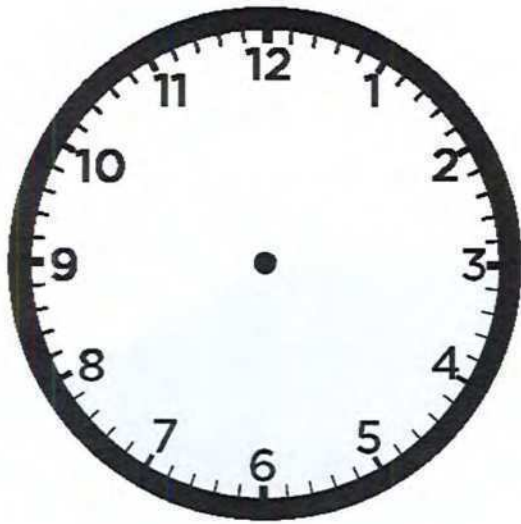
WHAT HAPPENED



Rate Comparison Tool – Customers Impacted



Rate Comparison Tool – Why 10,000 Customers?



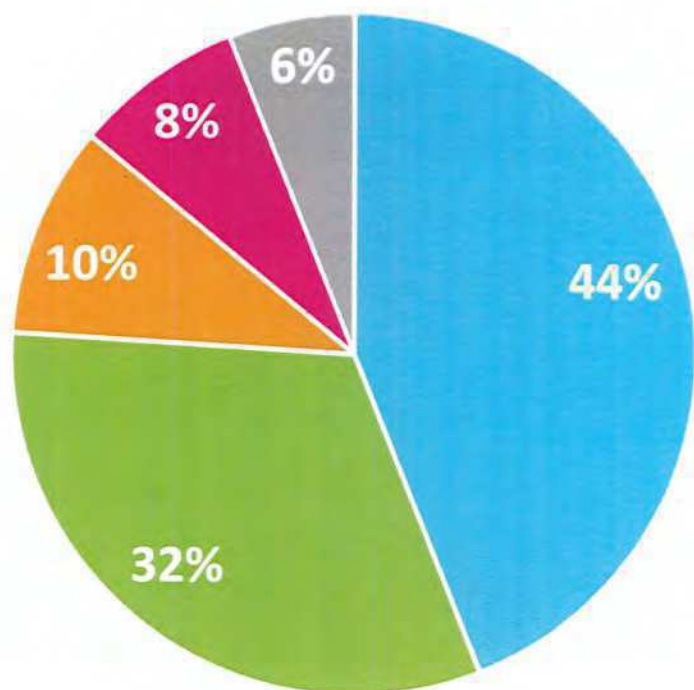
Billed Peak



Rate Comparison Peak

With the hour shift, the inaccurate recommendation affected customers who aggressively conserve during on-peak hours.

Rate Comparison Tool – Customer Impact (Feb–Nov)

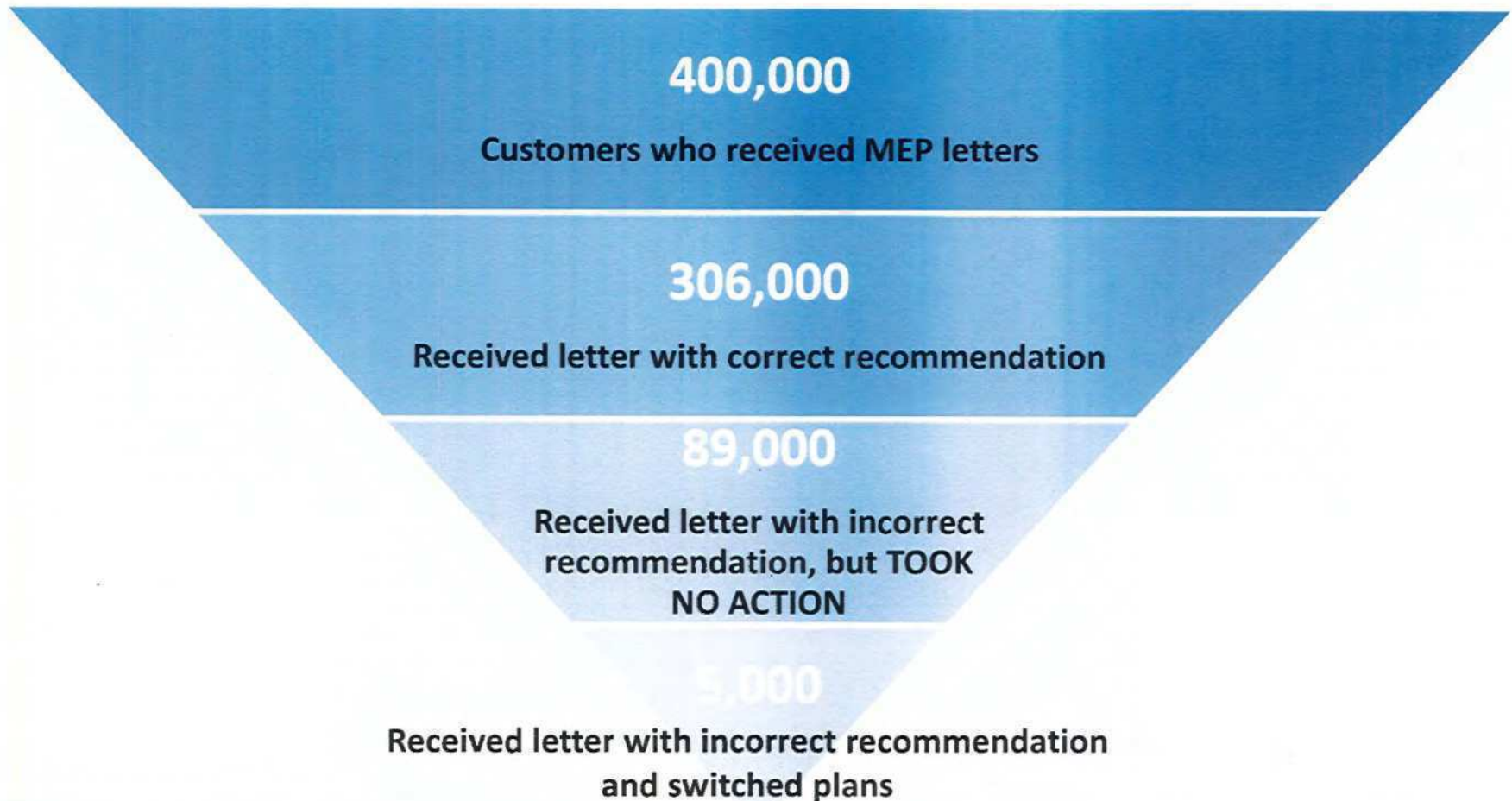


■ No Impact ■ Less than \$25 ■ \$25-\$50
■ \$50-\$100 ■ More than \$100

- 10,000 total customers switched to non MEP
- 4,400 (44%) have not experienced a financial impact
- Impact limited due to 66% changing rates in last 2 months

Note: Affected customers who experienced no financial impact either did not receive a bill on their new plan or paid less on actual bills during the period than they would have on “Most Economic Plan”

Rate Comparison Tool - Rate Plan Letters



Rate Comparison Tool – Customer Outreach Plan

- Credit those customers who switched to a plan that was not their most economical
- Reach out to customers who switched plans since February
- Reach out to customers who received an inaccurate plan recommendation letter
- Encourage customers to switch to their most economical plan

Rate Comparison Tool - Bill Credits to Make Customers Whole

Credit #1 Initial credit to impacted customers

Credit #2 Additional credit to those same customers when they switch plans (or on March 31, 2020 if they choose not to switch)

2019

2020



Every financially impacted customer will receive an additional \$25 credit for inconvenience

Rate Comparison Tool - Demonstration

Sample 1

Brattle

Independent Verification Analysis

Bill Comparison Options

Billing Definitions

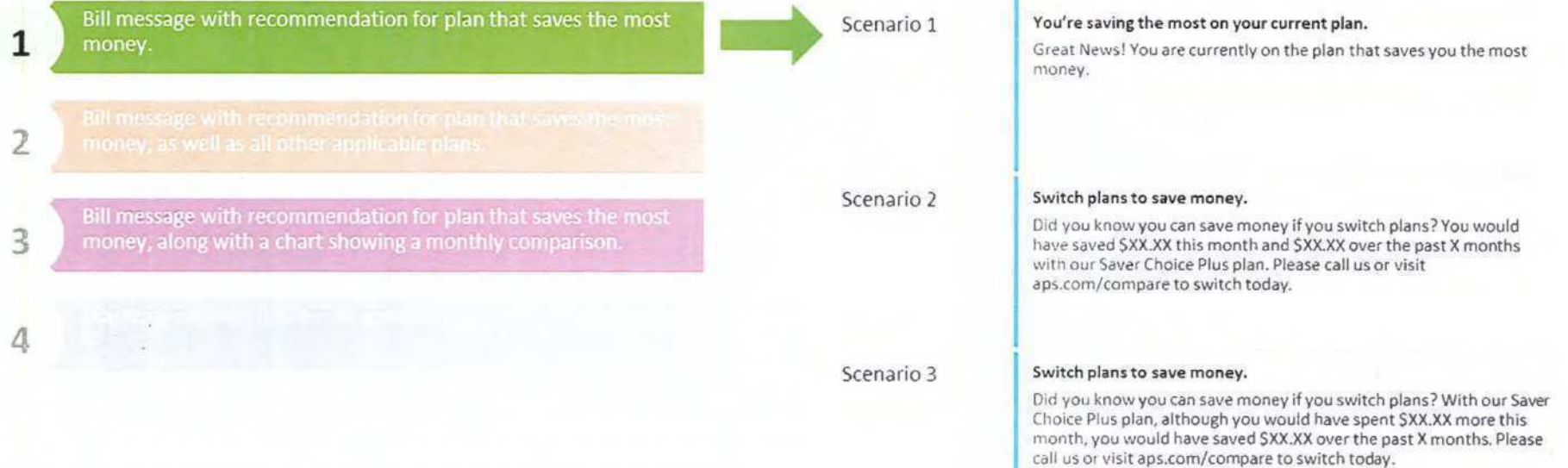
Term	Definition
Shadow Billing	A current monthly bill total amount on the existing service plan compared with the most economical plan
Pro forma Billing	Up to 12-month historical comparison of the total bill amount on the existing service plan compared to the most economical plan
Duplicate Bill	A complete rendering of the monthly bill with all itemized components on alternate service plans

Bill Comparison Options

- 1 Bill message with recommendation for plan that saves the most money.
- 2 Bill message with recommendation for plan that saves the most money, as well as all other applicable plans.
- 3 Bill message with recommendation for plan that saves the most money, along with a chart showing a monthly comparison.
- 4 Duplicate monthly bills for all applicable plans.

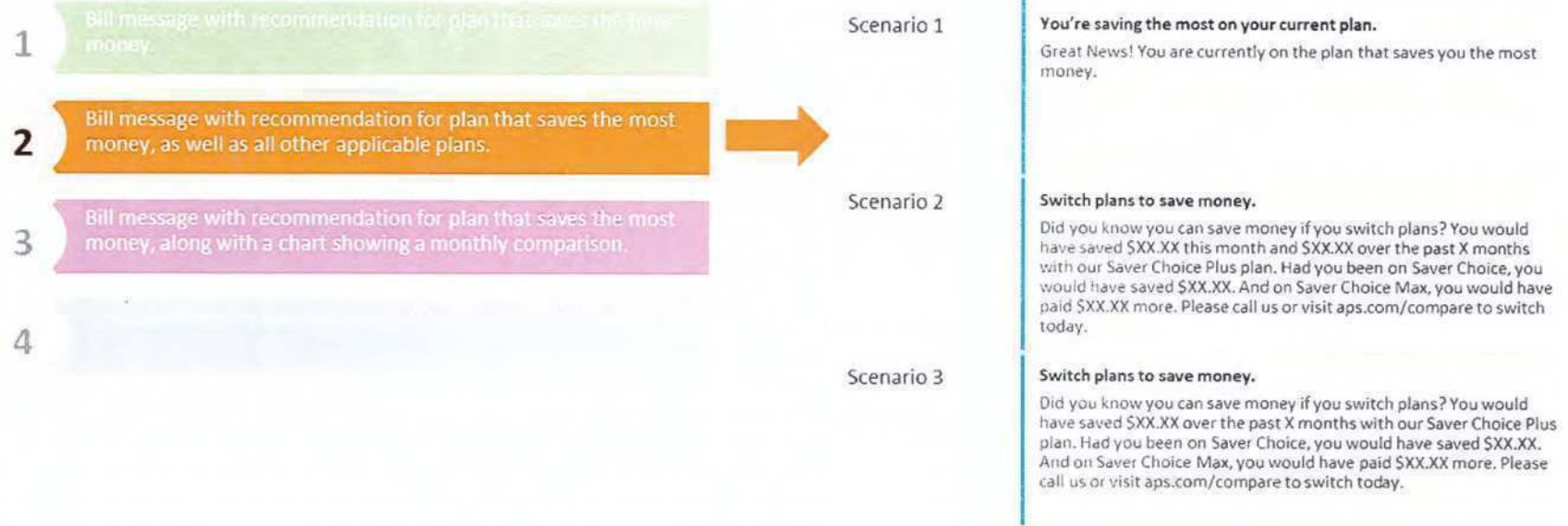
Bill Comparison Options - Recommended

1 Bill message with recommendation for plan that saves the most money.



Bill Comparison Options

2 Bill message with recommendation for plan that saves the most money, as well as all other applicable plans.



Bill Comparison Options

3 Bill message with recommendation for plan that saves the most money, along with a chart showing a monthly comparison.

- 1 Bill message with recommendation for plan that saves the most money.
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- 4 Bill message with recommendation for plan that saves the most money, along with a chart showing a monthly comparison.



Switch plans to save money.

Did you know you can save money if you switch plans? Looking at the plan comparison below, you would have saved \$13.35 this month and \$138.24 over the past 12 months with our Saver Choice Max plan. Please call us or visit aps.com/compare to switch today.

Plan Comparison Chart			
	Current Plan	Plan That Saves You the Most	Savings
	Saver Choice	Saver Choice Max	
Nov-19	\$105.05	\$91.70	\$13.35
Oct-19	\$157.66	\$145.41	\$12.25
Sep-19	\$229.63	\$190.88	\$38.75
Aug-19	\$240.01	\$195.00	\$45.01
Jul-19	\$243.25	\$191.78	\$51.47
Jun-19	\$164.61	\$138.85	\$25.76
May-19	\$155.15	\$139.68	\$15.47
Apr-19	\$111.81	\$122.08	(\$10.27)
Mar-19	\$98.76	\$120.93	(\$22.17)
Feb-19	\$88.18	\$86.74	\$1.44
Jan-19	\$116.63	\$147.17	(\$30.54)
Dec-18	\$103.27	\$105.55	(\$2.28)
Total	\$1,814.01	\$1,675.77	\$138.24

Bill Comparison Options – **Not Recommended**

4 Duplicate monthly bills for all applicable plans.

1 Bill message with recommendation for plan that saves the most money.

2 Bill message with recommendation for plan that saves the most money, as well as all other applicable plans.

3 Bill message with recommendation for plan that saves the most money, along with a chart showing a monthly comparison.

4 Duplicate monthly bills for all applicable plans.





Your electricity bill

Bill date: October 23, 2019

Summary of what you owe

Amount due on your last bill	\$57.76
<input checked="" type="checkbox"/> Payment made, thank you	-\$57.76
<input checked="" type="checkbox"/> Your balance forward	\$0.00
Your new charges (details on following pages)	
Cost of electricity (includes taxes and fees)	\$94.51
Total amount due	\$94.51
Payment due date	Nov 6, 2019



Your account number

Bill date

October 23, 2019

☐ Mailing address or phone number change?
Check here and fill in the details on the back.

#

I=0000000000

When paying in person, please
bring the bottom portion of your bill.

Total amount due: \$ 94.51

Payment due date: Nov 6, 2019

Total amount paid: \$ _____

Pay 24 hours-a-day, 7 days a week

- Visit aps.com/paybill
- Download our free, mobile app
- Call 602-371-6555 or 866-776-0445

News from APS

Get a friendly reminder when your bill is due

Designate a friend, relative or community agency as your Safety Net partner. Your partner will receive a copy of your monthly APS bill, so they can remind you when your payment is due or bring any late bills to your attention. Visit aps.com/safetynet to sign up or download an application today.

aps.com and mobile app - Designed to better fit you

We've added many helpful features to aps.com and our mobile app that make it even easier to save money and manage your energy account. Check out the new site and app today to view daily energy use, get a breakdown of your billing history, find ways to save and more.

Things you need to know

Contacting APS

- Visit our website: aps.com
- Call us at:
602-371-7171 (Phoenix) or 800-253-9405 (Other areas)
- Para servicio en español, llame al:
602-371-6861 (Phoenix) ó 800-252-9410 (Otras áreas)
- Hearing impaired:
Dial 711 - AZ Relay Service
- By mail: APS, Station 3200, PO Box 53933,
Phoenix AZ 85072-3933
- Blue Stake - Before you dig, call:
811 or 800-782-5348
- Electrical emergencies other than power outages, call:
602-258-5483 (Phoenix) or 800-253-9408 (Other areas)

Billing and collection information

Make checks payable to APS and mail to:

APS, PO Box 60015, Prescott AZ 86304-6015

Credit and Collections:

602-371-7607 (Phoenix) or
800-253-9409 (Other areas)

- Your utility bill is due and payable no later than 14 days from the bill date. Late payments will be considered delinquent and are subject to a late payment charge of 1.5% per month.
- If your power is shut off for nonpayment, you must pay the delinquent amount(s) and a deposit or additional deposit before power will be restored.
- **Deposit Guidelines:** APS may require a security deposit for service if the account, during a consecutive 12-month period, becomes delinquent with two or more bills or has been disconnected for nonpayment or, when a Non-Residential customer's financial condition may jeopardize bill payment (determined by APS using a credit scoring worksheet).
- When you provide a check as payment, you authorize us either to use information from your check to make a one-time electronic funds transfer from your account or to process the payment as a check transaction. When we process your check electronically you will not receive your check back from your financial institution and funds may be withdrawn from your account on the same day we receive your payment.

Utility regulations and rates (Not an APS payment site)

Electricity regulations and rates are approved by:

Arizona Corporation Commission,
1200 W Washington, Phoenix AZ 85007
602-542-4251 (Phoenix) or 800-222-7000 (Other areas).
www.azcc.gov

Mailing address or phone number change

First name, middle name, last name		
Address (number, street name)		
City	State	Zip + 4
Home phone		Business phone
()		()



PO BOX 60015
PRESCOTT AZ 86304-6015



Your electricity bill

October 23, 2019

Service plan: Premier Choice,E-3

Sample 1
Your account number

Meter number: [REDACTED]

Meter reading cycle: 15

Charges for electricity services**Cost of electricity you used**

Customer account charge	\$4.00
Delivery service charge	\$23.65
Environmental benefits surcharge	\$3.76
Federal environmental improvement surcharge	\$0.19
System benefits charge	\$2.10
Power supply adjustment*	\$1.26
Energy support program discount (25%)	-\$28.22
Metering*	\$6.88
Meter reading*	\$2.30
Billing*	\$2.59
Generation of electricity*	\$60.10
Federal transmission and ancillary services*	\$8.34
Federal transmission cost adjustment*	\$1.91
LFCR adjustor	\$1.31
Tax Expense Adjustor	-\$5.51
Cost of electricity you used	\$84.66

Taxes and fees

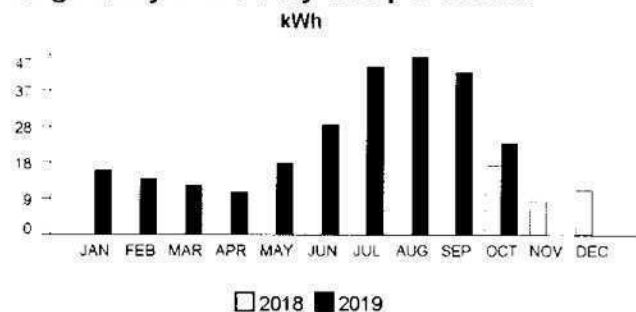
Regulatory assessment	\$0.20
State sales tax	\$4.85
County sales tax	\$1.38
City sales tax	\$1.73
Franchise fee	\$1.69
Cost of electricity with taxes and fees	\$94.51

Total charges for electricity services \$94.51

* These services are currently provided by APS but may be provided by a competitive supplier.

Amount of electricity you used

Meter reading on Oct 23	18096
Meter reading on Sep 21	17336
Total electricity you used, in kWh	760

Average daily electricity use per month**Comparing your monthly use**

	This month	Last month	This month last year
Billing days	32	31	31
Average outdoor temperature	65°	89°	75°
Your total use in kWh	760	1314	562
Your average daily cost	\$2.95	\$4.89	\$3.29

Switch plans to save money.

Did you know you can save money if you switch plans? With our **Saver Choice** plan. Although you would have spent \$6.81 more this month, you would have saved \$6.15 over the past 12 months.

Please call us or visit aps.com/compare to switch today.



Your electricity bill

Bill date: October 23, 2019

Summary of what you owe

Amount due on your last bill	\$87.52
<input type="checkbox"/> Payment made, thank you	-\$87.52
<input type="checkbox"/> AutoPay discount	-\$0.48
Your balance forward	-\$0.48
Your Budget Billing payment due this month	\$88.00
Total amount due	\$87.52

We will debit your checking or savings account for \$87.52 on November 6, 2019.

Budget Billing Status

Your current settle-up debit balance is \$178.29. For Budget Billing information, visit aps.com/budgetbilling



YOUR ACCOUNT NUMBER:



FOR SERVICE AT:



Questions?

- Log in to My Account at aps.com
- Go to support.aps.com for help
- Stay informed Visit aps.com/alerts

New payment address for online bill pay customers

There is a new payment address for online bill pay customers. It is APS, P.O. Box 60015, Prescott, AZ 86304-6015. Please update your bill pay info.

Use our Energy Analyzer tool to find money-saving tips

To save money, you have to know where to look. Start with our free online Energy Analyzer tool. After answering a few questions about your home's energy efficiency, you'll receive a report showing potential annual savings for your home. Visit aps.com/ea to get started.



Your account number

Bill date

October 23, 2019

☐ Mailing address or phone number change?
Check here and fill in the details on the back.



When paying in person, please
bring the bottom portion of your bill.

*You do not need to mail a payment.
With AutoPay, your payment is
automatically deducted from your
checking or savings account.*

News from APS

Get a friendly reminder when your bill is due

Designate a friend, relative or community agency as your Safety Net partner. Your partner will receive a copy of your monthly APS bill, so they can remind you when your payment is due or bring any late bills to your attention. Visit aps.com/safetynet to sign up or download an application today.

Super off-peak hours are here

Saver Choice plan customers will save even more with our lowest-cost Super Off-Peak hours from 10 a.m. – 3 p.m. beginning on your November bill through April. Super off-peak hours cost 70% less than regular off-peak hours.

Things you need to know

Contacting APS

- Visit our website: aps.com
- Call us at:
602-371-7171 (Phoenix) or 800-253-9405 (Other areas)
- Para servicio en español, llame al:
602-371-6861 (Phoenix) ó 800-252-9410 (Otras áreas)
- Hearing impaired:
Dial 711 - AZ Relay Service
- By mail: APS, Station 3200, PO Box 53933,
Phoenix AZ 85072-3933
- Blue Stake - Before you dig, call:
811 or 800-782-5348
- Electrical emergencies other than power outages, call:
602-258-5483 (Phoenix) or 800-253-9408 (Other areas)

Billing and collection information

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Credit and Collections

- 602-371-7607 (Phoenix) or
800-253-9409 (Other areas)
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- If your power is shut off for nonpayment, you must pay the delinquent amount(s) and a deposit or additional deposit before power will be restored.
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- When you provide a check as payment, you authorize us either to use information from your check to make a one-time electronic funds transfer from your account or to process the payment as a check transaction. When we process your check electronically you will not receive your check back from your financial institution and funds may be withdrawn from your account on the same day we receive your payment.

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1200 W Washington, Phoenix AZ 85007
602-542-4251 (Phoenix) or 800-222-7000 (Other areas)
www.azcc.gov

Mailing address or phone number change

First name, middle name, last name		
Address (number, street name)		
City	State	Zip + 4
Home phone	Business phone	
()	()	



PO BOX 60015
PRESCOTT AZ 86304-6015



Your electricity bill
October 23, 2019

Sample 2
Your account number

Service plan: Saver Choice

Meter number:
Meter reading cycle: 15

Charges for electricity services

Cost of electricity you used

Customer account charge	\$2.34
On-peak delivery service charge	\$2.09
Off-peak delivery service charge	\$8.12
Environmental benefits surcharge	\$2.78
Federal environmental improvement surcharge	\$0.08
System benefits charge	\$0.91
Power supply adjustment*	\$0.55
Metering*	\$6.43
Meter reading*	\$2.30
Billing*	\$2.59
Generation of electricity on-peak*	\$13.29
Generation of electricity off-peak*	\$16.67
Federal transmission and ancillary services*	\$3.60
Federal transmission cost adjustment*	\$0.83
LFCR adjustor	\$0.56
Tax Expense Adjustor	-\$2.38
Cost of electricity you used	\$60.76

Taxes and fees

Regulatory assessment	\$0.15
State sales tax	\$3.41
County sales tax	\$0.46
City sales tax	\$1.72
Franchise fee	\$0.00
Cost of electricity with taxes and fees	\$66.50

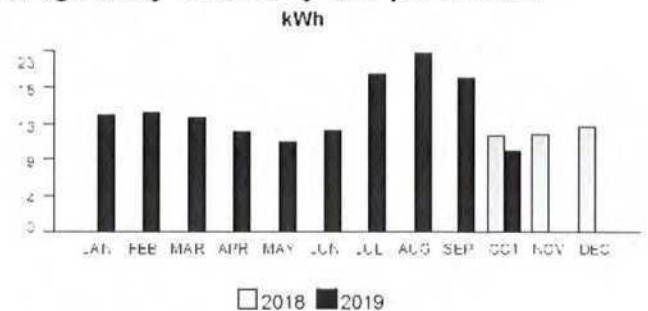
Total charges for electricity services \$66.50

* These services are currently provided by APS but may be provided by a competitive supplier.

Amount of electricity you used

Meter reading on Oct 23	33288
Meter reading on Sep 21	32960
Total electricity you used, in kWh	328
On-peak meter reading on Oct 23	9841
On-peak meter reading on Sep 21	9774
On-peak electricity you used, in kWh (3 pm - 8 pm Monday - Friday)	67
Off-peak electricity you used, in kWh (All other hours and certain holidays)	261

Average daily electricity use per month



Comparing your monthly use

	This month	Last month	This month last year
Billing days	32	31	31
Average outdoor temperature	51°	74°	60°
Your total use in kWh	328	608	382
Your average daily cost	\$2.08	\$3.66	\$2.56

Switch plans to save money.

Did you know you can save money if you switch plans? You would have saved \$10.43 this month and \$141.44 over the last 12 months with our [Lite Choice](#) plan. Please call us or visit [aps.com/compare](#) to switch today.



Your electricity bill

Bill date: November 20, 2019

Summary of what you owe

Amount due on your last bill	\$106.15
Payment made, thank you	-\$106.15
AutoPay discount	-\$0.48
Your balance forward	-\$0.48
Your new charges (details on following pages)	
Cost of electricity (includes taxes and fees)	\$64.77
Total amount due	\$64.29

We will debit your checking or savings account for \$64.29 on December 4, 2019.

YOUR ACCOUNT NUMBER:

FOR SERVICE AT:

Questions?

- Log in to My Account at aps.com
- Go to support.aps.com for help
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To save money, you have to know where to look. Start with our free online Energy Analyzer tool. After answering a few questions about your home's energy efficiency, you'll receive a report showing potential annual savings for your home. Visit aps.com/ea to get started.

Great News! You're already on the best plan



Your account number

Bill date

November 20, 2019

☐ Mailing address or phone number change?
Check here and fill in the details on the back

#

***You do not need to mail a payment.
With AutoPay, your payment is
automatically deducted from your
checking or savings account.***

News from APS

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aps.com and mobile app - Designed to better fit you

We've added many helpful features to aps.com and our mobile app that make it even easier to save money and manage your energy account. Check out the new site and app today to view daily energy use, get a breakdown of your billing history, find ways to save and more.

Things you need to know

Contacting APS

- Visit our website: aps.com
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- Para servicio en español, llame al:
602-371-6861 (Phoenix) ó 800-252-9410 (Otras áreas)
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- By mail: APS, Station 3200, PO Box 53933,
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- When you provide a check as payment, you authorize us either to use information from your check to make a one-time electronic funds transfer from your account or to process the payment as a check transaction. When we process your check electronically you will not receive your check back from your financial institution and funds may be withdrawn from your account on the same day we receive your payment.

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www.azcc.gov

Mailing address or phone number change

First name, middle name, last name		
Address (number, street name)		
City	State	Zip + 4
Home phone	Business phone	
()	()	



PO BOX 60015
PRESCOTT AZ 86304-6015



Your electricity bill
November 20, 2019
Service plan: Saver Choice Max

Sample 3
Your account number

Meter number:
Meter reading cycle: 14

Charges for electricity services

Cost of electricity you used

Customer account charge	\$2.12
Delivery service charge	\$6.09
Demand charge on-peak - delivery	\$5.20
Environmental benefits surcharge	\$2.82
Federal environmental improvement surcharge	\$0.14
System benefits charge	\$1.52
Power supply adjustment*	\$0.92
Metering*	\$5.83
Meter reading*	\$2.09
Billing*	\$2.35
Generation of electricity on-peak*	\$1.87
Generation of electricity off-peak*	\$13.84
Demand charge on-peak - generation*	\$10.71
Federal transmission and ancillary services*	\$6.04
Federal transmission cost adjustment*	\$1.39
LFCR adjustor	\$0.66
Tax Expense Adjustor	-\$3.99
Cost of electricity you used	\$59.60

Taxes and fees

Regulatory assessment	\$0.14
State sales tax	\$3.41
County sales tax	\$0.43
City sales tax	\$0.00
Franchise fee	\$1.19
Cost of electricity with taxes and fees	\$64.77

Total charges for electricity services \$64.77

* These services are currently provided by APS but may be provided by a competitive supplier

Amount of electricity you used

Meter reading on Nov 20 71800
Meter reading on Oct 22 71249

Total electricity you used, in kWh 551

On-peak meter reading on Nov 20 10412

On-peak meter reading on Oct 22 10364

On-peak electricity you used, in kWh 48

(3 pm - 8 pm Monday - Friday)

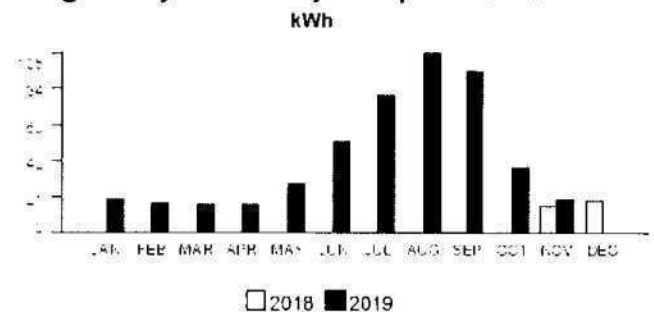
Off-peak electricity you used, in kWh 503

(6 pm - 3 pm Monday - Friday and all day on weekends and 10 holidays)

On-peak demand meter reading 1.34

Your billed on-peak demand in kW 1.3

Average daily electricity use per month



Comparing your monthly use

	This month*	Last month*	This month last year
Billing days	29	32	32
Average outdoor temperature	66°	77°	67°
Your total use in kWh	55*	1224	514
Percentage of on-peak use	9%	5%	12%
Your billed demand in kW	1.3	1.0	2.2
Your average daily cost	\$2.23	\$3.33	\$2.53

You're saving the most on your current plan.

Great News! You are currently on the plan that saves you the most money.



Assessment of APS's Bill Comparison Web Tool

METHODOLOGY AND FINDINGS

PREPARED BY
Ahmad Faruqui
Ryan Hledik
Cecile Bourbonnais

December 11, 2019

THE **Brattle** GROUP



Purpose and Scope

Purpose

APS commissioned The Brattle Group to assess the rate recommendations provided by its new bill comparison web tool

Scope

Conduct bill analysis for representative sample of more than 46,000 residential customers who are eligible to use the APS web tool

Independently assess the rate recommendations provided by the APS web tool to each customer in the sample

Approach overview



- Step 1: Establish a representative sample of customers
- Step 2: Obtain billing determinant data for sample
- Step 3: Independently develop bill calculator
- Step 4: Obtain APS web tool output for full sample of customers
- Step 5: Compare APS rate recommendations to Brattle calculations

Approach



Step 1: Establish a representative sample of customers

- APS randomly selected 55,343 service accounts from its residential customer base
- Of these, 46,757 were eligible for use of the APS web tool and therefore the subject of Brattle's analysis
 - Examples of reasons for ineligibility include being a customer with less than three months of billing history, distributed generation, or being a landlord
- The sample is significantly larger than the typical utility load research sample, which may consist of only a few thousand customers
- The sample aligns with the characteristics of the total population's monthly usage
 - Average customer monthly usage: 962 (sample) vs 996 (population)



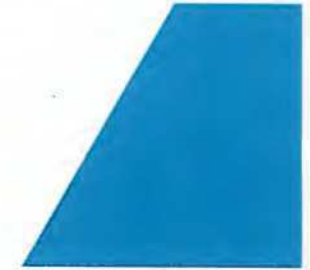
Approach (cont'd)

Step 2: Obtain customer usage data for sample

- Customer usage data provided by APS for each customer in sample
- Data provided for period from November 2017 through December 2019; where customers had more than 12 months of data, most recent 12 months were used

Step 3: Independently develop bill calculator

- Monthly bills for each customer in sample and each applicable rate schedule were independently calculated by Brattle
- Calculations were subject to confirmation from APS regarding rate eligibility and treatment of specific charges/taxes



Approach (cont'd)

Step 4: Obtain APS web tool output for full sample of customers

- Provided by APS in .xls format
- Included monthly and annual bill calculations and rate recommendations for each customer in sample

Step 5: Compare APS rate recommendations to recommendations from the Brattle tool

Comparison performed for each of the 46,757 customers in the representative sample

Finding

Brattle's calculations of the customer's best rate for each customer match those of APS for 99.9% of customers in the sample

Presenter Information



AHMAD FARUQUI, PH.D.

Principal San Francisco, CA

Ahmad.Faruqi@brattle.com

+1.925.408.0149

Ahmad Faruqi is internationally recognized for his work on the design, evaluation and benchmarking of tariffs. He has analyzed the efficacy of tariffs featuring fixed charges, demand charges, time-varying rates, inclining block structures, and guaranteed bills. He has also designed experiments to model the impact of these tariffs and organized focus groups to study customer acceptance. Besides tariffs, his areas of expertise include demand response, energy efficiency, distributed energy resources, advanced metering infrastructure, plug-in electric vehicles, energy storage, inter-fuel substitution, combined heat and power, microgrids, and demand forecasting. He has worked for nearly 150 clients on 5 continents, including electric and gas utilities, state and federal commissions, governments, independent system operators, trade associations, research institutes, and manufacturers.

Ahmad has testified or appeared before commissions in Alberta (Canada), Arizona, Arkansas, California, Colorado, Connecticut, Delaware, the District of Columbia, FERC, Illinois, Indiana, Kansas, Kentucky, Maryland, Minnesota, Nevada, Ohio, Oklahoma, Ontario (Canada), Pennsylvania, Saudi Arabia, and Texas. He has presented to governments in Australia, Egypt, Ireland, the Philippines, Thailand, New Zealand and the United Kingdom and given seminars on all 6 continents. He has also given lectures at Carnegie Mellon University, Harvard, Northwestern, Stanford, University of California at Berkeley, and University of California at Davis and taught economics at San Jose State, the University of California at Davis, and the University of Karachi.

His research has been cited in Business Week, The Economist, Forbes, National Geographic, The New York Times, San Francisco Chronicle, San Jose Mercury News, Wall Street Journal and USA Today. He has appeared on Fox Business News, National Public Radio and Voice of America. He is the author, co-author or editor of 4 books and more than 150 articles, papers and reports on energy matters. He has published in peer-reviewed journals such as Energy Economics, Energy Journal, Energy Efficiency, Energy Policy, Journal of Regulatory Economics and Utilities Policy and trade journals such as The Electricity Journal and the Public Utilities Fortnightly. He serves on the editorial board of The Electricity Journal. He holds BA and MA degrees from the University of Karachi, both with the highest honors, and an MA in agricultural economics and a PhD in economics from The University of California at Davis, where he was a research fellow.

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